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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/686,697 | 10/16/2003 | Paul A. Kohl | 62020-1550 | 7668 |
| 24504 | 7590 | 03/14/2006 | EXAMINER | |
| THOMAS, KAYDEN, HORSTEMEYER & RISLEY, LLP 100 GALLERIA PARKWAY, NW STE 1750 ATLANTA, GA 30339-5948 | | | LEE, SIN J | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 1752 | |

DATE MAILED: 03/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|--------------------------------------|------------------------------------|--|
| Office Action Summary | Application No. 10/686,697 | Applicant(s) KOHL ET AL. | |
| | Examiner Sin J. Lee | Art Unit 1752 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 December 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) 23-27 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8, 10-12, 18 and 19 is/are rejected.
- 7) ☒ Claim(s) 9, 13-17 and 20-22 is/are objected to.
- 8) ☒ Claim(s) 1-27 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Claim Rejections - 35 USC § 102

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 1-6, 10-12, 18 and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Shick et al (6,121,340).

Shick teaches a negative tone photodefinable dielectric composition comprising a polycyclic addition polymer containing recurring silyl pendant groups along the poly backbone (which is prepared by polymerizing a silyl substituted polycyclic monomer such as *norbornene*) and a photosensitive crosslinking initiator (see col.9, lines 65-67, col.10, lines 1-2, lines 16-40). In col.65, lines 19-46, Shick teaches forming a negative tone image by applying his photodefinable composition (which contains his polymer and

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an onium salt photoinitiator (*present photoacid generator*) to a substrate, exposing the obtained film to UV radiation through a mask, developing the exposed film to remove the unexposed portions and to give negative tone images. Therefore, Shick teaches present inventions of claims 1, 2, 4, 5, 10-12, 18 and 19. Shick also teaches present invention of claim 3 because present specification (pg.8) states that present positive tone photoinitiator includes a photoacid generator.

With respect to present claim 6, Shick teaches that his polymers can be terminated with an olefinic end group (see col.15, lines 58-67, col.16, lines 1-20). Thus, the prior art teaches present invention of claim 6.

4. Claims 1, 2, 4, 5, 7, 8, 10-12, 18 and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Jacobine et al (5,167,882).

Jacobine teaches (see abstract) a method of stereolithography for building a three-dimensional article using a liquid resin composition, which comprises (a) a first compound having a *plurality* of norbornene groups thereon, (b) a second compound having a plurality of thiol groups therein, and (c) a free radical photoinitiator. As particularly preferred norbornene compounds, Jacobine mentions norbornene carboxylate esters of *polyols* such as 1,6-hexanediol, trimethylolpropane, ethoxylated bisphenol A (col.2, lines 59-62). As examples for the photoinitiator, Jacobine includes benzoin compounds (see col.3, lines 27-35). Jacobine builds a three-dimensional article from his liquid resin composition by *patternwise curing* successive layers of a bath of the curable liquid resin composition until the article has been completely built up.

Therefore, Jacobine teaches present inventions of claims 1, 2, 4, 5, 7, 8, 10-12, 18 and 19.

Allowable Subject Matter

5. Claims 9, 13-17, and 20-22 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Neither Shick nor Jacobine teaches or suggests present photoinitiators of claim 9. Neither Shick nor Jacobine teaches or suggests present step of removing exposed portions of the photodefinable polymer composition as presently recited in claim 13. Neither Shick nor Jacobine teaches or suggests present method of claim 14.

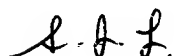
Response to Arguments

6. Applicant's arguments filed on December 27, 2005 have been fully considered but they are not persuasive. Applicants seem to be arguing that present 102(b) rejections over Shick et al'340 and Jacobine'882 should be withdrawn because neither of references spells out the word "a sacrificial polymer" as referenced in claim 1. The Examiner disagrees. As established above, both Shick and Jacobine teaches present polynorborene of claim 4, and besides, both of the references are using the polynorbornene in the same way as being claimed in present claim 11. Therefore, although those references do not literally spell out the word "a sacrificial polymer", it is the Examiner's position that those polynorbornenes as being used in Shick and Jacobine *inherently* teach present sacrificial polymer.


7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sin J. Lee whose telephone number is 571-272-1333. The examiner can normally be reached on Monday-Friday from 9:00 am EST to 5:30 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia Kelly, can be reached on 571-272-1526. The fax phone number for the organization where this application or proceeding is assigned is **571-273-8300**.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



S. Lee
March 6, 2006



SIN LEE
PRIMARY EXAMINER